

—F. J. Higgins.

# SR/Research

## SCIENCE & HUMANITY



**DEPARTMENTS:** Research in America • Personality  
Portrait—XXXIV • Science in Books • The Research Frontier

**ARTICLES:** Career Scientist-Diplomats?

### RESEARCH IN AMERICA

## TAKING THE MIRACLE OUT OF THE MIRACLE DRUGS

**P**RESCRIPTION of antibiotics without a specific cause for such treatment has reached disturbing proportions. The practice has been discussed in medical journals, and some of the profession's discomfiture has leaked to a wider public. But no general, full disclosures have been made. I shall therefore begin by calling attention to a plainly worded censure published in the October 1958 issue of *Postgraduate Medicine*. Dr. C. Henry Kempe, professor of pediatrics and head of the department of pediatrics at the University of Colorado Medical School in Denver, couched the rebuke in language that might ordinarily be expected to be reserved for the instruction of healers from some bypassed culture.

"It is suggested," he wrote, "that (the physician) . . . formulate a tentative specific . . . diagnosis . . . prior to the administration (of an antibiotic) . . . and that he give such a drug only when (its effectiveness is) . . . indicated (by the diagnosis)."

In italicising the word *prior*, Dr. Kempe expressed an extraordinary need for emphasis. Why is such a pointed exhortation called for in these days when the rawest medical student is assumed to accept the primacy of accurate diagnosis? Dr. Kempe offered this explanation:

"All of us desire to get our patients well as quickly as possible and all of us desire to be completely up to date and therefore we are usually tempted to try everything new as fast as it comes along. . . . We quickly make . . . new antibiotics . . . useless to us by their overuse . . . as forms of better aspirin . . . in the treatment of fever . . . rather than what they truly are. We constantly assume that a drug is no good if the fever fails

to drop promptly, and this leads to the quick addition of a second and a third antibiotic."

He plainly felt that many of his fellow physicians had forgot another beginner's lesson in medicine:

"Fever is only a symptom . . . a symptom of many diseases *other* than bacterial infections . . . a prominent symptom in viral respiratory infections which are insusceptible to antibiotic treatment at present."

The injunction was clear. Distinction must be drawn between those fevers which antibiotics unquestionably are effective in lowering (and in these, which tend to be the historic plagues of man—typhus, typhoid, meningitis, syphilis, gonorrhea, tularemia, brucellosis, bacterial endocarditis, pneumonia, tuberculosis, scarlet fever, intestinal disorders, and boils—the effect is miracle-like) and other fevers where antibiotics are not only useless but a potential danger.

An antibiotic is by definition a position made by a living organism (like the one pictured at work on our masthead above) to kill or disable another living organism. This type of drug is useful principally against diseases caused by bacteria, germs, microscopic "bugs." Virus infections are susceptible in some cases: trachoma, "parrot fever," and the social disease known as *lymphogranuloma venereum*, for instance. Some diseases caused by the virus-like *rickettsia* (typhus, scrub typhus, Rocky Mountain spotted fever are examples) also respond to antibiotic treatment. But antibiotic prescriptions are an extravagant waste of money if they are directed against any of the commonly recognized virus ills, such as infantile paralysis, encephalitis, influenza, or the common cold.

By failing to distinguish between one fever and another before prescribing antibiotics, Dr. Kempe warned, physicians have confronted themselves with "the problem of no longer knowing the natural history of many diseases"—the changed environment of the originating organisms, their population distribution, their identifying characteristics. In short, doctors are in danger of forgetting how to tell common sicknesses apart. Should that happen, modern medicine would succumb to mumbo-jumbo.

There is time to avert catastrophe by reversing the trend. Until the prevailing carelessness is brought to an end, however, individual calamities can and will pile up as a result of indiscriminate antibiotic dosing. In summing up the situation in *Postgraduate Medicine*, Dr. Kempe listed five areas pregnant with the probability of tragedy.

First—and worst on his list was the masking of serious disease by ineffective medication. The real cause of an undiagnosed infection does not appear for five to ten days after the first visit to the doctor. It takes that long to decide that an antibiotic isn't working. During the interval of ignorance, the patient is getting no better and is probably getting worse. In absence of specific diagnosis, other alternatives may be presenting themselves, such as

Second—vomiting, nausea, diarrhea, anal itching due to poisoning;

Third—hypersensitivity to antibiotics, resulting in various forms of distress from outbreaks of hives to death in extreme cases;

Fourth—alteration of the normal balance of bacteria in the digestive system, bringing on dangerous complications, or;

# STL

Space Technology Laboratories' role in the fields of Ballistic Missiles and Space Vehicles provides a medium through which scientists and engineers are able to direct their interests and abilities towards the solution of complex space age problems.

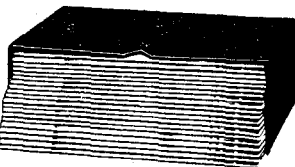
STL invites inquiries regarding staff openings.

Space  
Technology  
Laboratories, Inc.  
P.O. Box 95001,  
Los Angeles 45, Calif.

## HANDY FILE

FOR YOUR COPIES  
OF

*Saturday Review*



- Keep SATURDAY REVIEW issues neat, clean, in order
- With washable leatherette cover and 16-carat gold leaf lettering designed especially for SATURDAY REVIEW

- Holds 26 copies

\$2.50 each, postpaid  
(3 for \$7.00, or 6 for \$13.00)

**MONEY BACK IF NOT  
COMPLETELY SATISFIED**

**ORDER DIRECT FROM:**

**JESSE JONES BOX CORP.**

**DEPT. SR • BOX 5120  
PHILADELPHIA 41, PA.**

Fifth—encouragement of growth of new dangerous strains of bacteria which are resistant to antibiotics.

THE particularly pernicious effect of this fifth alternative among patients in hospitals has been known to medicine for almost five years. At first, medical authorities discouraged writers from disseminating the facts on the grounds that people who needed hospital care would be frightened away. Since new-born babies were prominent in the lists of early victims, and since the old-fashioned services on which safety of home-delivery of infants once depended have disappeared, there was a genuine dilemma. As time passed and resistant strains of bacteria continued to flourish at the expense of their human hosts, however, it became clear that only the pressure of fully informed public opinion could bring about reforms. Somewhere in the neighborhood of 500 hospital epidemics occurred between 1954 and autumn of 1958. The worst one, in Texas, took twenty-two lives. By last September, U. S. Surgeon General Leroy E. Burney was ready to admit that drug-resistant strains of staphylococcus had become a menace of "national significance and growing magnitude." A million dollars of public health moneys were set aside for research into the problem. The American Hospital Association formally called upon its members to establish Committees on Infection to enforce controls of antibiotic use. Although no one said as much openly, regulations laid down by these committees leave no doubt that hospital staffs had been relying on the wonder drugs to free them from the drudgery and tedium required by old-fashioned boiling, steaming, and scrubbing. The introduction to a warning pamphlet circulated by the New York State Department of Health, for instance, concluded with this capital-lettered sentence: NO PATHOGEN HAS YET DEVELOPED RESISTANCE TO ASEPTIC TECHNIQUE. In simpler words: Antibiotics are no better substitute for cleanliness than they are a shortcut for diagnosis.

WHAT we are really involved with here is the necessity of learning to live with our environment. There is an outer environment and an inner environment. Overuse of antibiotics has been changing the inner environment just as surely as we alter the weather and our food-growing capacity along with the landscape when we denude the countryside of trees. The human respiratory and digestive tracts are considerably more than networks of tubes and tissues; they are

the dwellings of many different kinds of bacteria, which live and work together in a marvelously contrived division of labor. Without them, what we eat would never get digested. When the delicate balance among them is disturbed, we suffer greater or less discomfort, depending on the extent of the disturbance and the immediate state of our body defenses.

The staphylococcus germs that are now playing hob in the hospitals have been with us at least since the days when they afflicted Job with boils. Ordinarily they cause little trouble because they have to compete with other bacteria for living space. As long as they are kept down, they in turn keep their competitors down and this is good for us. The purpose of the anti-"staph" cleanup is to restore the normal healthy balance of old—not to wipe out "staph."

TO BACTERIALLY sterilize (a person) ... is impossible," Dr. Kempe reminded the physicians he was addressing in the pages of *Postgraduate Medicine*. "It simply cannot be done. No matter how many antibiotics one gives, it is impossible to get rid of every bacterium. The more we give and the more we try to eliminate the bacteria, the more chance we provide for the one, two or five remaining ones to overgrow and become pathogenic (vicious), when, in the natural way of things they would not be pathogenic."

The overgrowth that Dr. Kempe cautions against is exactly what turned "staph" into such a dangerous enemy.

A growing segment of the medical profession is now struggling to correct a misleading notion it gave to patients generally about this whole matter by prescribing antibiotics as a blanket prophylaxis in the early days of antibiotic therapy. You didn't get an antibiotic to fight "flu"; you got it for the pneumonia germ that might cause secondary infection following the "flu" attack. Under special circumstances (which can be determined only by careful diagnosis) the possibility of rapidly fatal pneumonia might be sufficient to justify the precaution. There are a few reports in the medical literature favorable to a broader interpretation of successful prophylaxis against pneumonia in cases of "flu." The record runs heavily against the practice, however. Generally, nothing is lost by waiting to see whether pneumonia actually develops. The germ can't be killed before it appears. Antibiotics do not convey a systemic buildup, as, for instance, do vitamins. To kill a germ, they must be aimed like rifle bullets. Their use in shotgun-type

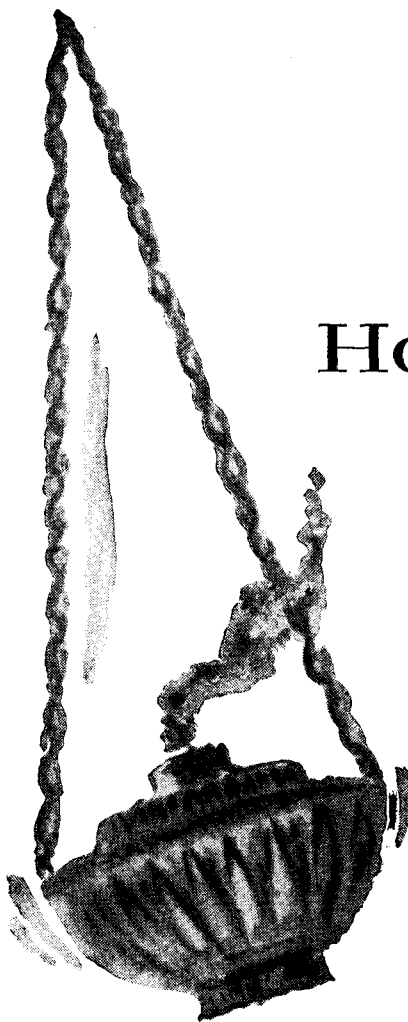
therapy is ludicrous. I have read of an extreme case where penicillin was administered to stave off "complications" in a sprained toe. The owner of the toe died. An autopsy was performed. The toe was dissected. Its tissue was normal in every respect.

**A**NTIBIOTIC prophylaxis in surgical cases is inevitably a fight against unidentified infection. It can't be identified because no surgeon can tell which of the company of bacteria disturbed by his knife may take the upper hand momentarily. Experience indicates that the preventive practice has its value in those instances where the region of operation either is frankly infected or very likely to be infected at the time the surgeon goes to work. Included in this category are open wounds due to violence, severe burns, shortening of the large bowel, and certain complex entries of the esophagus and lungs.

Ordinary surgery is a quite different matter. Here the record shows that prophylactic antibiotics do more harm than good. Dr. Kempe's study cited in this connection the results of 250 clean operations. Of these 250 cases, 154 did not receive antibiotic therapy. Among those 154, only 7.8 per cent developed bacterial aftermath. The remaining ninety-six patients in the test group of 250 cases all got prophylactic antibiotics. Bacterial complications arose in 37.5 per cent of the ninety-six cases *while they were receiving the antibiotics*. "In our own . . . experience," Dr. Kempe reported, "bacterial complications in clean operations are five times as high in prophylactically treated patients as they are in patients who are not given antibiotics prophylactically."

**T**HOSE are the disturbing facts about antibiotic prescriptions. What can be done about them? Should the individual patient take the initiative and ask his doctor about it? He might perform a public service by doing so. There are several unusual circumstances in this particular situation that should make patients' interest welcome to physicians.

One of these circumstances is the prevalence of massive advertising pressure. Established ethical drug houses, traditionally cautious in advancing claims for their medicines, are being jostled and jolted competitively in antibiotic sales by the Madison Avenue "hard sell" of bulk chemical makers who have invaded the drug field with a great deal of money to spend and no comparable history of restraint in promotion of their wares. The contrast will be clearer if you keep in mind that lack of self-policing with-



## How to save 77 years

The boy Galileo sat in the sanctuary of Pisa's great cathedral, observing the movement of a lamp which had been set swinging by a sudden gusty draft. The chain by which it was suspended from the high ceiling was of such a length that the arcs decreased but slowly. Strange thing, though. No matter how far the pendulum swung, its movement consumed the same time. Galileo made a note of that. The year was 1581.

The old man sat at his writing desk, sixty years and a thousand disputes later, writing down a new theory. The regularity of a swinging pendulum might be combined with a spring mechanism to improve the unreliable clocks of that day. So Galileo scribbled on, and did nothing more about it. A number of years after his death Huygens took the notes and invented the pendulum clock. *Seventy-seven years had elapsed since the boy made the observation upon which it was based!*

The creative thinker today still need not have a specific use in mind when, by equation or formula, he branches off

from the accepted to the hitherto unknown. The classic invention of this decade, the transistor, evolved in the Bell Telephone Laboratories as scientists sought a deeper understanding of semiconductors. On the other hand, another great invention, the feedback amplifier, came from the acutely creative mind of one Bell engineer faced with a specific problem.

Current Bell Laboratories activities—in such areas as data transmission, radar and submarine cable development—call for the coordinated efforts of all types of thinkers and all types of approaches. One type complements another.

Today, seventy-seven years would not have elapsed between the swinging lamp and the swinging clock pendulum—certainly not at Bell Labs, where ideas, though not rushed, are carefully advanced toward fruitful application in national defense, industry and communications. An important part of this harvest is the efficiency of America's telephone service, unequalled anywhere else in the world.

**BELL TELEPHONE LABORATORIES**

WORLD CENTER OF COMMUNICATIONS RESEARCH AND DEVELOPMENT



ELECTRONIC REPRODUCTION PROHIBITED



# EVERYDAY... EVERYWHERE... MORE AND MORE PHYSICIAN

WILLOUGHBY 5-5002

THOMAS WRIGHT, M. D.  
EYE, EAR, NOSE AND THROAT

87 CENTRAL STREET  
LOWELL, MASS.

OFFICE HOURS  
BY APPOINTMENT

E. N. STEPHENS, M.D.  
PEDIATRICS

120 S. W. TAYLOR STREET  
PORTLAND, OREGON

OFFICE HOURS  
DAILY 9 A. M. TO 1 P. M.  
SAT. BY APPOINTMENT

TELEPHONE  
JENSUP 6-220

Above is reproduced a panel from a brochure advertising an antibiotic (Pfizer Laboratories). Its readers are invited to accept the

in the bulk chemical industry recently necessitated a new Federal law restricting chemical additives to food. Anyhow, the pressure of the chemical newcomers to the drug market has driven some of the old-line ethical houses off balance and put a shriller tone into some of their antibiotic advertising, too.

The consequence, as Dr. Kempe reported it in *Postgraduate Medicine*, is that "advertising claims made for each new antibacterial agent . . . are always unduly enthusiastic and sometimes misleading. The physician is constantly faced with free samples" and a "bewildering array of persuasive literature"; he must put up "a considerable degree of sales resistance to undue or premature advertising claims," particularly in regard to "fixed combinations of two, three, four or five antibiotics." "At least sixty-nine preparations" of this type are being touted in "commercial exploitation of the physician's fear regarding the emergence of resistance (to one antibiotic, which theoretically could be fought by a different antibiotic in the combination) or doubt of his own diagnostic capabilities." But the truth is that "in many instances" these multiple drugs "reflect the competitive nature of the drug business rather than . . . therapeutic . . . need." They are "sometimes dangerous . . . , particularly undesirable" in treating children.

*The New England Journal of Medicine*, loudest thunderer for medical integrity in America today, has been blasting away at excesses in antibiotic advertising for at least a year. Repeatedly exhorting its doctor-readers not to "readily fall prey to the psy-

chological warfare embodied in the high-powered techniques of modern sales promotion," the *Journal* took pains to spell out how the claims are built up. "Some manufacturers," it declared, "are inclined to incorporate products in which they have a proprietary interest (or at least in which their competitors have not) rather than products that are the best available but in which they do not have such interests." Antihistamines, adrenocortical steroids, and vitamins are thrown into the antibiotic mixtures in response to "pressure . . . brought to bear on the management (of the drug houses) by the sales force to provide some combination to meet effective competition."

**T**HE sales force, in this context, does not include "detail men" the drug houses send to doctors' offices to follow up the ads. The "detail men" are generally honest in giving whatever information they possess. More often than not, however, their employers withhold unfavorable information from them. This peculiarity of drug marketing was brought out in a special article that Dr. Joseph Garland, the *New England Journal's* editor, published last July. The piece was written by Dr. Solomon Garb, associate professor of pharmacology at Albany Medical College of Union University. It described an experimental teaching project incorporated into the sophomore class curriculum at Albany Medical College in 1957.

The project was designed to acquaint medical students with drug advertising evaluations they would have to make after they became doctors. The students were given an op-

portunity to determine whether the content of drug ads fairly reflects the real usefulness and the real dangers of the drugs advertised.

It was a voluntary study. Roughly half the class took part in it. Each of the volunteers picked at random one drug ad that had come in the ordinary mail of a member of the Albany Medical teaching staff. The assignment required each student to learn all he could about that one drug and then to decide how honest the ad for the drug had been.

The class as a whole ended the project convinced that drug makers try to exaggerate the value of their medicines at least half the time. Almost three quarters of the students believed that exaggeration occurred in eight to ten cases out of ten, and that undesirable qualities were minimized just about as often. In many instances the drug manufacturers ignored requests for detailed documentation of their advertising claims, or responded to the queries by sending another copy of the same ad. Only a few drug houses came through with what an idealistic young doctor would expect, and the names of those few grew to be such imposing symbols of reliability that the class decided it would be safer to prescribe drugs by their trade names instead of by the standard nomenclature given in the *U. S. Pharmacopoeia*.

The medical students' disillusionment did not end with the ads that came through the mail. They were equally shocked by the ads they read in medical journals. Seventy-five per cent of the class felt that journal ads did not give enough information about the drugs, especially not cau-

# FIND SIGMAMYCIN THE ANTIBIOTIC THERAPY OF CHOICE

**JOSEPH BURNS, M.D.**  
INTERNAL MEDICINE

PHONE  
ECTOR 7-9132

245 S. 1ST STREET  
MIAMI, FLORIDA

**PAUL D. FRIEND, M.D.**  
DERMATOLOGY

1345 EASTBOURNE AVE.  
TUCSON, ARIZ.

PHONE  
ARIZONA 1-9032

physicians it names as endorsers of the drug. Actually, the Science Editor of SR has discovered not one of these physicians exist.

tionary information. One student was downright insulted by the guff he felt expected to swallow. He wrote:

"The ads I have seen directed to chemists or to engineers in their professional journals in no way approach the use of, shall we say 'color' in medical journal ads. This seems to indicate that Madison Avenue considers the medical man about as prone to their blatant claims in drugs as a woman is to an ad on a deodorant, while other professional men are not in the same category. They might be right."

The students discovered that certain companies put new drugs on the market before reporting any clinical studies of those drugs. In several instances the ads announced that clinical studies were in progress and would be described later. This reminded one physician-to-be of Alice in Wonderland—the verdict first, after that the trial.

On the editorial page of the issue of *The New England Journal of Medicine* in which the Albany Medical experiment was described, *Journal* editor Garland concurred in the medical students' criticism of ads in medical publications like his own.

"Some medical journals seem to accept advertising with little question of the merits of the product," he wrote, "and frequently the advertisement does not contain enough information to enable any reasonable check on the claims. Often new drugs are advertised before any informational articles have appeared in reputable journals or have even been accepted for publication."

"Almost universally there is a toning down or at times a complete lack

of information concerning toxicity and adequate precautions to be followed in the use of drugs."

\* \* \*

## *The Case of the Invisible Physicians*

**A**NOTHER and distinct problem, aside from whether the ads accurately present the qualities of the antibiotics, is the pure use of advertising pressure. Because excessive pressure which could lead a doctor to premature prescription of what might later prove to be even a superior medicine is a public danger. Following is an example of excessive pressure I have come across in the course of my work as Science Editor of the *Saturday Review*.

The ad in this case was a brochure bearing the name of Pfizer Laboratories, a division of Charles Pfizer and Co., Inc. The brochure told physicians who received it through the mail that they now had available to them "the antibiotic formulation with the greatest potential value and the least probable risk . . . highly effective—clinically proved new, multi-spectrum synergistically strengthened Sigmamycin particularly for the 90% of the patient population treated in home or office where sensitivity testing may not be practical."

A banner of bold type across the top of the ad read: "Every day . . . everywhere . . . more and more physicians find Sigmamycin the antibiotic therapy of choice." Beneath the banner were strung what appeared to be reproductions of the professional cards of eight physicians scattered across

the country. The cards were complete in every detail down to office hours and telephone numbers (see examples on this and facing page). The names, specialties and addresses were given as follows: Thomas Wright, M.D., Eye, Ear, Nose, and Throat, 97 Central Street, Lowell, Mass.; E. N. Stephens, M.D., Pediatrics, 120 S.W. Taylor Street, Portland, Ore.; Joseph Burns, M.D., Internal Medicine, 245 South 1st Street, Miami, Fla.; Paul D. Friend, M.D., Dermatology, 1345 Eastbourne Avenue, Tucson, Ariz.; John Turner, M.D., Surgery, 85 Oakwood Avenue, Los Angeles, Calif.; Arthur Granger, M.D., Gastroenterology, 315 N.W. 15th Street, Philadelphia, Pa.; W. A. Porter, M.D., Urology, 4421 State Street, Evanston, Ill.; Richard R. Jones, M.D., General Practice, 132 East 59th Street, New York, N.Y. Though one purpose of the reproduction of these cards undoubtedly was to show the versatility of the drug, readers of the ad could hardly avoid considering the named doctors as witnesses to the efficacy of this antibiotic.

The staff of SR/Research has tried to reach each of the eight individuals named. Telephone calls have been made, telegrams have been sent, and the following letter has been written:

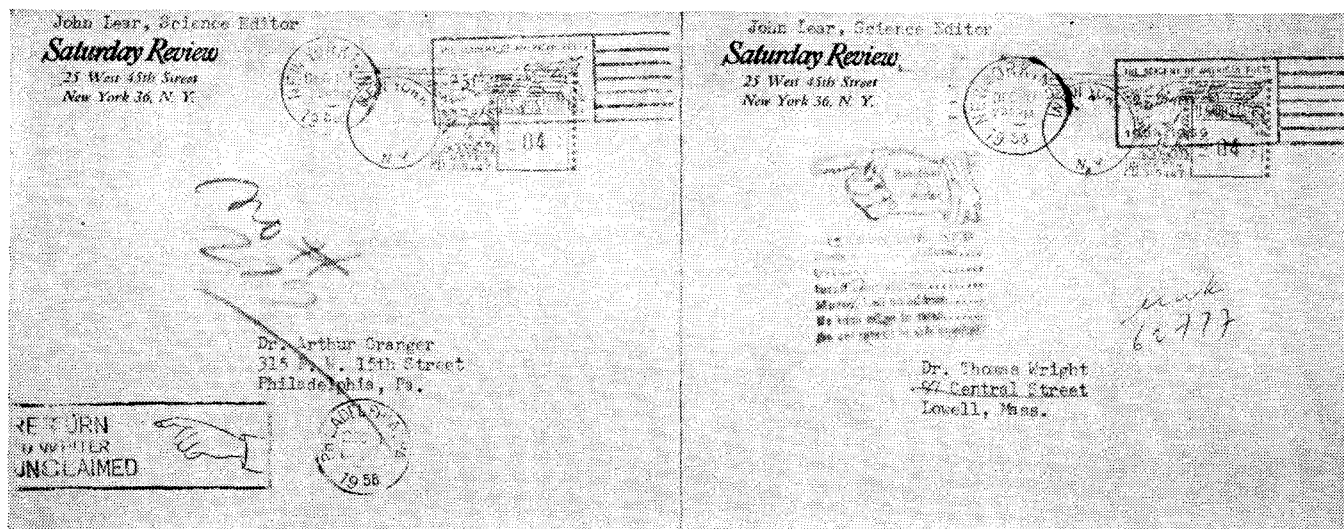
"Dear Dr. \_\_\_\_\_:

"If you have published any of your clinical experiences with Sigmamycin, I would appreciate your sending me the reference or preferably a reprint, if available.

"Sincerely yours,  
\_\_\_\_\_."

The telephone operators have reported all of the phone numbers to





Letters addressed to the supposed owners of name cards in the antibiotic ad on last two pages were returned unclaimed; above are two.

be false numbers, Western Union has reported inability to find such persons, and seven of the eight letters had been returned unclaimed by the Post Office at the time this page went to press. Four of the envelopes are reproduced on this and the next page.

I suppose that if the manufacturer in whose name the ad was circulated were taken into court and asked to explain, he would argue that the ad did not say the namecards were actual reproductions or that either the names or addresses were authentic. And he would be right.

I don't know how the law would weigh his case. But I do know that the Pharmaceutical Manufacturers' Association — formed last spring through merger of two older groups, The American Drug Manufacturers Association and the American Pharmaceutical Manufacturers Association — adopted and publicized a statement of principles for ethical drug advertising which includes this sentence: "Every effort must be made to avoid ambiguity and implied endorsement."

\* \* \*

**O**F COURSE, nothing said by an advertiser relieves the individual physician of responsibility for checking before he uses the drugs the ads promote. But can a busy doctor find time to check all the names in all the ads when his office mail sometimes brings him one piece of advertising literature *every day for ninety consecutive days heralding a single drug*?

If you are by this time boiling inwardly against the hazards that antibiotic ads placed in the path of your own and your family's wellbeing, cool down and simmer awhile on the doctor's behalf. He, pursued soul, has often suffered worse punishment

than he has allowed to pass to you. The antibiotic samples rained on his desk have sometimes been used in "advance" treatment of his own children, with serious consequences. Two-thirds of the deaths that have occurred from blood aberrations due to one antibiotic occurred in doctors' families. At least one deaf daughter is described in the medical literature as a victim of therapy-by-advertising-sample and it can reasonably be assumed that there are many more and greater tragedies.

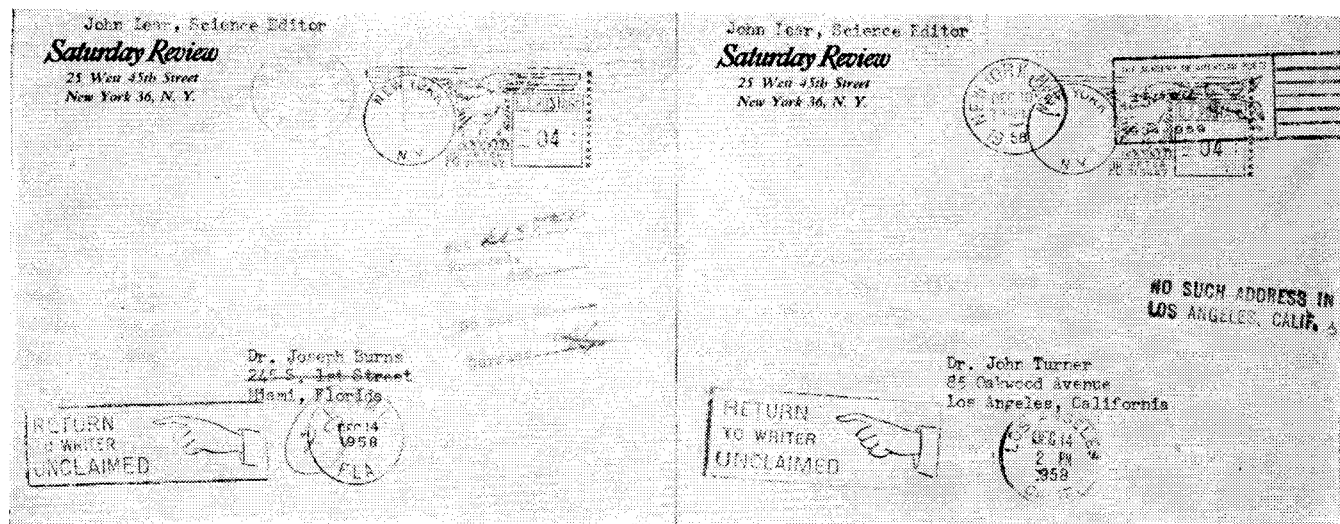
It is in this area of responsibility for error that the interest of patients can help doctors most. Medicine today has a keener consciousness of danger from damage suits than at any time in my memory. Professional journals recently have been occupied with the legal implications of patient dissatisfaction. And, so far as antibiotics are concerned, the direction of possible suits is shifting. In the early days of these "wonder" medicines, the assumption was that complaint would be more likely if a prescription were withheld or delayed. This helped to create the atmosphere of indiscriminate dosing which now prevails. Under cover of that atmosphere a record of unfortunate results of poor or no diagnosis has accumulated to the point where future patient protest will almost certainly be against the prescribing of antibiotics where they are not really required.

It may be argued that a patient is supposed to have complete faith in his doctor and that if the doctor is so harassed by the drug ads, he should follow the advice Professor Garb drew from the experiences of his students at Albany Medical College: "that the physician . . . instruct . . . his nurse or receptionist to throw all advertisements except

first class mail into the wastebasket unopened." Such a view is entirely reasonable. But it leaves out of consideration what Boris Pasternak's heroine in "Dr. Zhivago" says was the real beginning of Russian Communism—the fashion of not believing in the integrity of one's own opinions—the popularity of substituting "the glittering phrase." When patients took the glittering phrases about antibiotics from the newspapers and the pocket magazines and carried them demanding to doctors' offices, the doctors accommodatingly prescribed these newest of the "wonder" drugs. Here was a plain abdication of responsibility. In appraising the delinquency, however, each patient must answer the question: If he had asked his doctor for an antibiotic and the doctor had refused to prescribe one, would the patient have accepted that decision or tried to get the drug from another doctor?

**I**T MAY surprise you, as it surprised me, to know how much the doctor must rely on the good will of his patients. As the experiment of the Albany Medical students indicates, he has nowhere to turn for quick, dependable advice on the true performance of new drugs. The ads begin to bombard him (and sometimes his patients) six months or more in advance of a judgement from the American Medical Association.

Why aren't ads for new drugs banned until the AMA drug council has time to appraise them? I have discovered no satisfactory explanation. Perhaps it's because the facts haven't been known well enough to stir up public indignation. The most likely explanation I have heard is that drug sponsors thwarted by strict policing have on one or two occasions filed damage suits against



Here are two more of the eight letters mailed to supposed endorsers of drug and returned by the Post Office to SR's Science Editor.

medical journals which refused the offending ads.

**A** MOVE is now on foot to set up an independent medical agency to appraise new drugs for doctors willing to pay for the service. The fee won't be prohibitive if enough doctors subscribe. Conservative drug houses recognize that some reform is in order. By filing full reports of clinical trials of their new drugs, they would put a silent squeeze on the high pressure. Those manufacturers who didn't report would be in the position of selling unlisted products—drugs the doctors would be reluctant to buy. If this approach doesn't work—or even if it does—the United States Congress certainly can put the burden of proof on drug makers just as it has put the burden on manufacturers of chemical additives to food.

A patient's intelligent concern, intelligently expressed, can sharpen the role of diagnosis in a doctor's mind. Dr. Kempe noted in *Postgraduate Medicine* that "it is becoming increasingly popular for physicians in general practice and pediatrics to do their own bacteriologic examination in their own offices. It is now possible to purchase sterile media (plates of germ-food on which the germs will grow if they are present) by mail at a . . . cost of less than fifty cents a plate . . . (from) Hyland Laboratories . . . (and) simple egg incubators . . . (to keep the media warm while the germs grow) . . . costing less than \$50 . . . (can be bought from) . . . Montgomery Ward or Sears Roebuck and Company." Growth of this practice may have a salutary effect in speeding the work of hospital labs, which have the advantage of being able to assess epidemic patterns in the community.

*Under what conditions* a doctor prescribes antibiotics is a valid, simple

question to which a patient can fairly expect a simple, straightforward answer. What diagnosis the doctor makes is a subtler question which involves sensitivities affecting the mutual confidence vital to a successful doctor-patient relationship. And there may be times when, because of symptoms that are common to several different diseases, he must await developments and perhaps prescribe antibiotics as a precautionary measure in the meanwhile. Beyond a mild demurrer to prophylactic prescriptions, there is not too much a patient can say without risking misunderstanding. The readiness of a person's body to accept antibiotic therapy should, of course, be established as clearly as possible. Anyone who is asthmatic, or afflicted with allergies of any kind, should make that known if the doctor isn't already aware of it, because there is a good chance of allergy to antibiotics. Resistance to penicillin is a special problem; thousands of people unknowingly subject themselves to the risk by drinking penicillin in the milk they buy—it comes from cows that are being treated for bovine infection; the U. S. Food and Drug Administration is trying to work out a dye that will discolor such milk and thus end its saleability, but this protection has not yet been achieved nor is there any law to prevent farmers from marketing such milk. Anyhow, if a doctor knows that a patient is sensitive to antibiotics he will be in better position to judge which is the greater threat to health—the infection that could be stopped by an antibiotic or the reaction the antibiotic could bring.

Enough has been said about combinations of antibiotics up to this point in my report to leave no doubt that packaged combinations in general are suspect, despite the favorable propaganda you see everywhere. The world

dean of antibiotic therapists, Dr. Maxwell Finland, of Harvard Medical School and Boston City Hospital, has stated in a symposium on the subject that "I know . . . in practice . . . only three diseases . . . in which combined antibiotics have proved really useful." The three are tuberculosis (where streptomycin and PAS, or isoniazid and paraminosalicylic acid, are used together), subacute bacterial endocarditis (where streptomycin and penicillin together apparently work greater effect than either alone), and brucellosis (where one of the tetracyclines is added to streptomycin). "There are some antibiotics, however, which have a known tendency to produce resistance, mostly in staphylococci but in some instances in other . . . organisms," Dr. Finland adds; "these drugs should not be used alone." They are streptomycin, erythromycin, and novobiocin. But even after these are included, it is Dr. Finland's opinion that "*any and every* combination that comes . . . in a package may be a vicious distortion of the best use of medicine."

**S**O IT is the individual doctor's personal responsibility to formulate himself whatever combination in whatever amounts he thinks is required, if any combination is required, for the particular care of a given patient. He should have every encouragement to do exactly that. As Dr. Kempe wrote in concluding his findings in *Postgraduate Medicine*:

"Happily, medicine remains a highly individualized vocation. What is more fitting, therefore, than that each of us (physicians) should work out his own therapeutic philosophy? It is our hope that this philosophy will be at once enlightened and responsible."

—JOHN LEAR,  
Science Editor.





*Repeatedly since June 1956, SR/Research has pleaded for appropriate recognition of science as a force in American foreign policy. Twelve months ago we had the pleasure of reporting the designation of Dr. Wallace R. Brode as Science Adviser to Secretary of State John Foster Dulles. Last month the State Department finally named aides for him abroad—Science Attaches in the Embassies of London, Paris, Rome, Bonn, Stockholm and Tokyo—the first Science Attaches to be assigned in two years. Why the delay? Adviser Brode blamed elaborate security clearance procedures. Old State hands put the onus on his inexperience at liaison. Seemingly science has something to learn from diplomacy as well as vice versa. We hope the two will get to know each other better before the really ticklish science jobs are filled in*

*Moscow, New Delhi and South America. Full understanding, however, can come only with time. Graham Du Shane, editor of Science, official journal of the American Association for the Advancement of Science, has published an editorial proposing a way to gain the time. We reprint it as an expression of our own belief that statesmanship is as worthy a goal for a scientist as are laboratory experiments.*

## CAREER SCIENTIST-DIPLOMATS?

### *They Could Work a Permanent Influence on Foreign Policy*

By GRAHAM Du SHANE

**T**HE appointment of Science Officers to serve at several of our embassies prompts us to take another look at the role of science in the Department of State. The revival of the science office, which began nearly a year ago with the appointment of Wallace R. Brode as Science Adviser to the Secretary of State, indicated that the Department recognized the need for a mechanism to ensure that scientific factors would be taken into account in decisions affecting foreign policy and that contact between foreign and American scientists needed to be facilitated.

The general pattern for the organization of the Science Adviser's Office is now clear. At the base is a Washington staff of which the principal officers, in addition to Brode, are as follows: Deputy Science Adviser L. H. Farinholt, who was formerly professor of chemistry and director of the chemical laboratories at Columbia University and science attaché in London in 1954; Assistant Science Adviser Mary E. Corning, physical chemist, who was formerly with the National Bureau of Standards; Raymond L. Zwemer, zoologist, who was for three years chief of the Division of International Cooperation for

Scientific Research at UNESCO in Paris; and Assistant to the Science Adviser Walter M. Rudolph, who has been in the science program since its beginnings in 1947.

The Science Officers (who appear to be equivalent to the attachés under the earlier program) will serve for two years and will be backed up by Deputy Science Officers, who will serve similar but overlapping terms to provide for continuity. These officers will be assigned only to certain major and centrally located countries, but they will be expected to keep abreast of developments that bear on foreign policy in neighboring countries. Provision is being made for carrying out similar functions in countries beyond the purview of the Science Officers by the designation of foreign service officers, who have the requisite familiarity with science, to cooperate with the science office.

**T**HIS is the formal structure. How it will work in practice will depend less upon its table of organization than upon a number of unspecified and informal relations. However favorable the predisposition of the old-line foreign service officers may be to the newly appointed Science Officers, the latter will still have to work out their precise role in the embassies and gain

an accepted place. So also, the Science Adviser's office will have to maintain and improve its working relations with such other branches within the Department as the International Cooperation Administration and the Technical Cooperation Administration and with outside agencies such as the National Science Foundation, the National Academy-National Research Council, and the Killian Committee.

**T**HE new office has its work cut out for it. Not the least of its tasks will be that of avoiding the gradual attrition that afflicted its predecessor, an attrition which was the more readily brought about by the short-term appointments of scientists; when their terms came to an end, no successors were appointed. The new office has a greater assurance of continuity in that its Washington base is permanently staffed, but the Science Officers are still vulnerable by virtue of their limited terms of appointment. Perhaps the best remedy is to establish career appointments for at least some of the Science Officers, who would thus become scientist-diplomats. A permanent cadre of this kind would give greater continuity of experience and increase the chances that the work would be maintained when the political winds blow cold.